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ABSTRACT

A study was conducted using positive reinforcement to increase and maintain the time spent participating in study behavior of a six-year-old female kindergarten student and to introduce the teacher to behavioral change techniques. Attending and non-attending study behaviors were observed during 30-minute independent study periods in the classroom. The S received a star for each two minutes (later, each minute) of appropriate study behavior. She could later exchange the stars for prizes and/or privileges that she valued. Reliability checks were made by comparison observations of the four observers. After six reinforcement sessions, positive reinforcement was discontinued to determine whether gains in study behavior were related to reinforcement. Reinforcement was initiated again after a percentage increase in non-study behavior was noted. Results showed the technique to be a success, but it is felt the experiment might have had a more lasting effect if the study had not been concluded prematurely by the closing of school. (KM)

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THE USE OF REINFORCEMENT PROCEDURES TO INCREASE THE PERCENT OF STUDY BEHAVIOR WITH A KINDERGARTEN CHILD[1]

Virginia Krauft[2]

In many instances it is desirable to modify or change a student's behavior in a specified direction. Several studies have been conducted which involved conditioning attending behavior, (8, 4, 6). Related studies which present the use of contingency management as ways to alter classroom behavior also have been done (9, 3). The use of tokens or similar objects as immediate reinforcers have been extensively used in studies of contingency management of classroom behavior (2, 5, 7, 1). The tokens are later exchanged for various prizes, items, objects, edibles, and/or privileges.

This experiment was based upon the findings of Walker and Buckley (8). They applied individual conditioing techniques in a controlled setting to increase attending behavior of an underachieving 9 year old boy. Their procedure involved:

> (1) "Determining a stable response pattern, (2) introducing a treatment variable to establish a high rate of task-attending behavior, (3) measuring the effect of withdrawal of the treatment variable after attaining criterion performance, and (4) transfering control to the classroom. The interval of attending behavior required for reinforcement was systematically increased from 30 seconds to 600 seconds as the behavior came under experimental control. Manipulating the reinforcing contingencies measurably changed the proportion of attending behavior and the fre-

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quency and duration of non-attending events. Once the behaviors were under experimental control, procedures were established to program generalization and maintain the behavior outside the experimental setting." (8:245)

The purpose of this present study was to increase and maintain the time spent participating in study behavior of a 6 year old female kindergarten student. It was also designed to introduce the teacher to behavioral change techniques.

METHOD

Subject

The subject was a 6 year, 4 month old kindergarten student. She was retained in kindergarten because of "immaturity" during the academic year '69-'70. The subject had been referred for a "psychological evaluation" because of her "emotional extremes" in class. When the teacher was asked to describe "emotional extremes" she stated:

"L____is happy only when she is the center of attention. She rejects assistance from her peers even when it is offered in friendship. She has become so emotional that being corrected by me causes near hysterics."

Experimental Space and Materials

This investigation was conducted in the classroom, during periods when the subject was assigned to independent work at her desk. For two weeks (three periods a week) a basal rate of percentage of time spent participating in study behavior was obtained. An observation form similar to the one used by Walker and Buckley (8) was used to record attending

behavior. These behaviors included looking at the assigned page, working problems, drawing, writing, reading, and coloring. Non-attending or non-participating study behavior included asking for the teacher's help or trying to gain teacher attention when she was given assignments. The observers included three high school seniors and this writer. The materials used included pre-designed notepads, pens, and stop watches. Stars were used during reinforcement sessions. The stars were exchangeable for prizes, edibles, and privileges provided by the parents and school personnel.

PROCEDURE

Experimental Conditions

Baseline The baseline was measured by recording the frequency with which the child emitted the specific behaviors in the classroom before treatment variables were instituted. The baseline period lasted two weeks. The child was observed three days a week for 30 minutes a day during individual study times. These were times when the teacher sent the children to their respective seats and instructed them to do exercises that involved working independently.

Token Reinforcement Prior to the initiation of phase II, a contract was written by this writer and presented to the school principal, the classroom teacher, the subject's parents, and the subject. All parties involved read and signed the contract which specified the objective of the study and the role requirements of all participants. It was explained in the contract how and when the child would receive stars and how and when she could exchange them for prizes, edibles, and/or privileges. The examiner (E)

administered stars to the Subject (S) contingent upon S's behavior as predefined. The S received 1 star, and later in the study two stars for every two minutes of appropriate study behavior. The most she could earn in one session (30 minutes) was 15, and later 30 stars. The number of stars was increased so the child might obtain a larger prize before the study ended.

The E was seated within 4-8 feet of the S. During the observation sessions the S was observed and records were made of her study behavior. During the experimental session the E would turn a page on pad over every two minutes so the subject could see it. If the child had satisfactorily fulfilled the contract requirements--attending to studies and not asking her teacher for help--a star was placed on the page prior to turning it; thus, when it was flipped over the S could observe the star and immediately know she had met the requirements of the contract. Each star had a number under it so the S could observe the accumulated total at any one glance. After the 30 minute session ended, the total number of stars accumulated were given to the teacher to be given to the S at the end of the school day. The stars could then be taken home by the S and exchanged for prizes, edibles, and/or privileges. Stars earned could be spent on the following:

Privileges	Number of Stars Needed
1. Ice cream cone (small)	5
2. Ice cream cone (large)	10
3. Popsickle	8
4. Help make popsickle	15
5. New **puzzle**	75
6. New book	100

7.	One movie (attend)	50
8.	New record	1000
9.	Toy ring	10
10.	Five minute extra playtime	30
11.	Five minute visiting time with principal	30
12.	Five minute visiting time with personnel (office)	30
13.	Kite	30
14	Other items as agreed upon by all signers or the contract	--

The S could spend her stars on the above privileges by tellings any of the adult signers of the contract which of the reinforcers she desired. At the completion of the study it was noted the parents provided all the privileges requested by the child.

Reversal After 6 sessions of experimental observation a probe was instituted to determine whether the behavioral alterations effected in the experimental period were related to the reinforcing property of the stars. Reversal procedures were discontinued after three sessions since a percentage increase in non-study behavior was noted.

Reinstatement of Tokens After reversal procedures had been established, the previous contingencies were reinstated. Three sessions (30 minutes each) were involved in this protion of the study.

Throughout the study, reliability checks were made by comparing observation forms which were compiled by four independent observers (three high school seniors and this writer). The agreement remained at .97 or above.

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RESULTS

In Figure 1, the percent of time spent in appropriate study behavior is presented. The baseline data is recorded at 10 minute intervals

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Insert Figure 1 about here

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for the first six sessions--or a total of 19 10-minute observation periods. The baseline data represents the time spent in appropriate study behavior, which range from 40 to 90 percent. The experimental sessions represent observation periods 19 to 36 (sessions 7 to 12). During the experimental sessions, percentage of appropriate study behavior ranged from 80 to 100 percent of the time. Scoring during the probe sessions (13 to 15), observational periods (37 to 45), indicated that 70 to 90 percent of the time was spent in appropriate study behavior. During a period of reinstatement of the stars (sessions 16 to 18, observational periods 46 to 54) the S spent 80 to 100 percent of her time in appropriate study behavior.

DISCUSSION

The results of this study have shown that operant conditioning principles could be applied to a kindergarten female subject to increase the amount of time spent engaging in appropriate study behavior. This study also has shown that stars backed up by reinforcers identified as being desirable by the S were an effective reinforcer for this S.

This program also introduced the classroom teacher, school principal and the S's parents to effective techniques for controlling the child's behavior. Unfortunately, adequate time was not available to introduce the child to an intermittent schedule of receiving stars.

Ultimately, teacher praise paired with stars given by the teacher should have ended the need for stars as a reinforcing contigency. It is felt by the E that if the above techniques had been applied, the study might have had a more lasting effect upon the child's study behavior. As it was, the closing of the school concluded the project prematurely. Nevertheless, the data obtained does represent significant information regarding the practicality of the utilization of this technique with this child in the future.

In the final analysis, it should be noted this study was successful in part due to the cooperation and concern shown by the child's parents, the school personnel, and the child. In the future school psychologists might utilize such techniques as described in this study to extend their consultive roles via introducing effective techniques for bringing about the behavioral changes in individual children within the classroom. Through cooperation with the local high school seniors, observers were made available. Observers such as these in the future could save the school psychologist time and yet let him/her continue control over the program being instituted. Involving the parents and school personnel in this project also helped introduce a specific type of behavioral change technique to these people in hopes that they might adopt similar procedures while attempting to change other behaviors children might exhibit in the future.

It might be noted in closing that this study lasted six weeks and only one child in the entire kindergarten class of 28 children questioned what the stars, observers and prizes meant. Most of the children appeared unconcerned or unaware of the on-going study.

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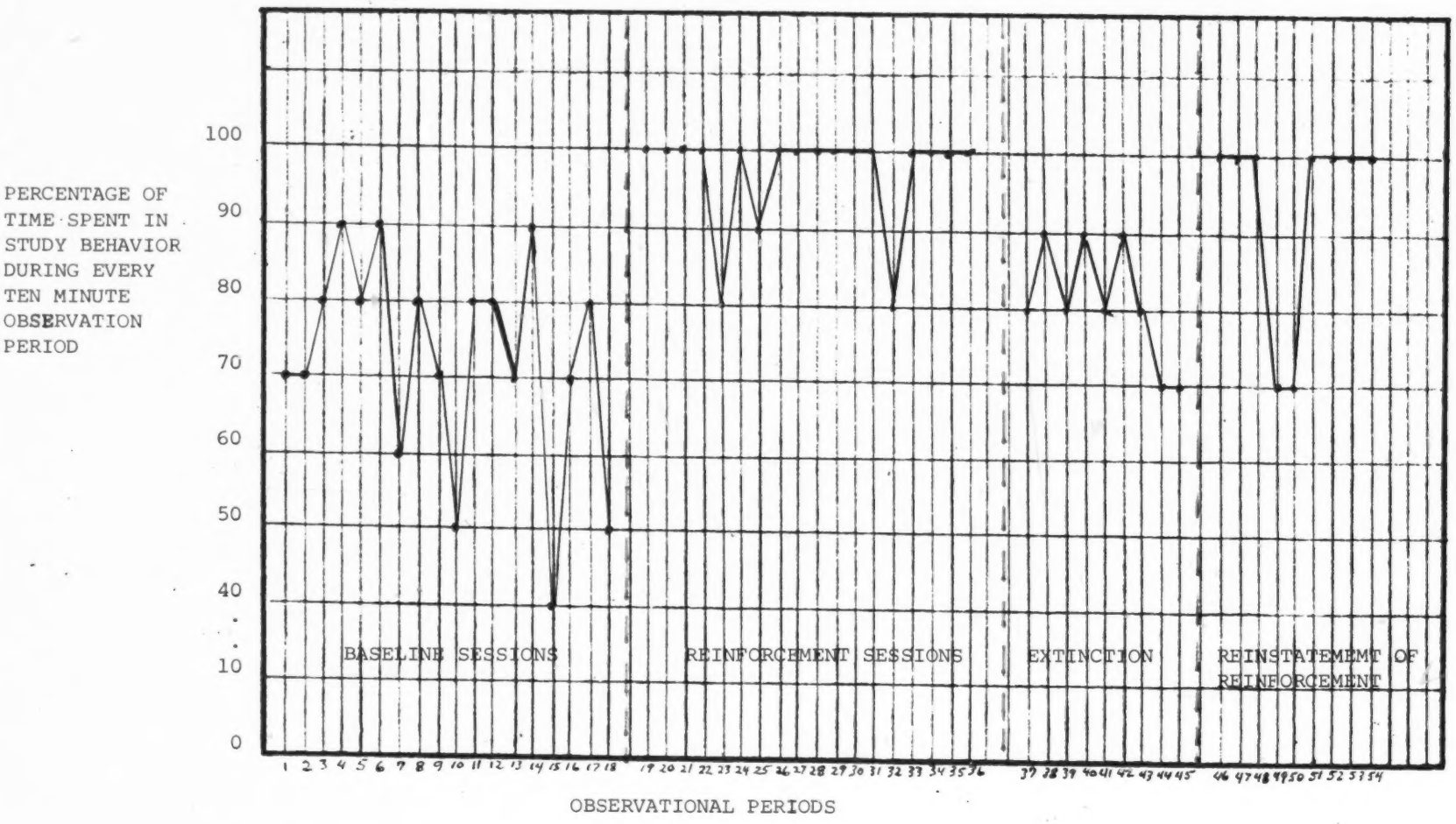
FIGURE 1 Percent of time spent in appropriate study behavior under conditions of baseline, token (star) contingency, extinction, and reinstatement of token contingency


PERCENTAGE OF TIME SPENT IN STUDY BEHAVIOR DURING EVERY TEN MINUTE OBSERVATION PERIOD
100
90
80
70
60
50
40
10
0
BASELINE SESSIONS
REINFORCEMENT SESSIONS
EXTINCTION
REINSTATEMEMT OF REINFORCEMENT
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
OBSERVATIONAL PERIODS

FOOTNOTES

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